**ELK CREEK COLONY**
**CHANGE APPLICATION**

## TIMELINE

APPLICATION SUBMITTAL DATE: January 19, 2010

DEFICIENCY LETTER SENT BY DNRC: March 2, 2010

WRSI RESPONSE TO DEFICIENCY: March 30, 2010

WRSI CLARIFICATION OF DEFICIENCY RESPONSE: May 28, 2010

DNRC ENVIRONMENTAL ASSESSMENT: September 30, 2010

DNRC PRELIMINARY DETERMINATION: December 21, 2010

PUBLICATION OF PUBLIC NOTICE: January 5, 2011

OBJECTION RECEIVED: February 15, 2011

OBJECTION RESOLVED/WITHDRAWN: August 4, 2011

ORDER GRANTING APPLICATION & CHANGE: August 8, 2011

## OVERVIEW

PROJECT LOCATION: Four miles southeast of Augusta

- An application for beneficial use was made for the Elk Creek Hutterite Colony, a spin-off colony of the Milford Colony. In 2009, an 800-foot well was drilled into the underlying bedrock to locate an adequate water supply.
- Because little water was found, the Colony decided to use shallow wells located in the alluvium adjacent to the Colony.
- Because the Colony buildings are located a minimum of 2000 feet from the alluvium and the alluvium is only 18 feet deep to a restrictive clay layer, individual wells were deemed inefficient and unworkable.

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| PURPOSE OF USE: | Domestic: | 16.8 AF/year (150 people) |
| | Stock: | 31.0 AF/year (600 sows, 13,250 piglets, 200 dairy cows, 25,000 chickens, 1500 turkeys) |
| | Industrial: | 2.0 AF/year (shops and concrete batch plant) |
| | **Total:** | **49.8 AF/year** |

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## MEETING THE APPLICATION CRITERIA

Groundwater Availability

- The Applicant must conduct pumping tests in the proposed wells to derive drawdown and aquifer characteristics. Aquifer characteristics must then be used to model the extent of the radius of influence (edge of the cone of depression) of the pumping wells.
- Groundwater monitoring must be conducted to establish the hydraulic gradient (grade and direction of groundwater flow).

Physical Availability

- Physical availability is assessed by determining whether a well can adequately supply the water requested. Pumping tests to determine drawdown characteristics are used to show that each well is capable of providing the flow rate and volume requested in the application. Basically, the water level is monitored and plotted on a logarithmic time scale. If the projected water level remains above the pump over the one-year period of diversion, you have shown that water is physically available.

Legal Availability

- Legal availability is shown by determining the annual volumetric flux in the aquifer (available to the pumping wells) and then subtracting the volume of water that is already appropriated. If the remaining volume is greater than the volume requested, you have shown that water is legally available.
- The radius of influence of the wells is modeling using aquifer characteristics determined from pumping tests.
- Darcy's Law is then used to determine the volume of water in the radius of influence (using aquifer hydraulic conductivity, aquifer thickness, aquifer gradient, and width of the zone of influence).
- DNRC records are used to determine the existing appropriations within the radius of influence of the proposed wells. The volume of those existing appropriations plus the volume asked for by the Colony were subtracted from the aquifer volumetric flux determined by Darcy's Law. Because existing and proposed demands were lower than the annual volumetric flux through the aquifer, water was shown to be legally available.

Adverse Effect

- Adverse Effect to Groundwater – Adverse effect to existing groundwater rights was evaluated by forward-modeling distance-drawdown related to the proposed appropriation for a period of five years. It was found that projected drawdown at nearby wells would not cause adverse impacts.

- Adverse Effect to Surface Water – Because the Colony fully mitigated the volume of consumptive use by retiring a portion of existing irrigation, there could be no impact to

surface water rights. The timing of depletions to the Sun River resulting from the proposed appropriation and the timing of accretions (additions) to the Sun River from the proposed mitigation were assessed and found to offset each other. The use of the infiltration trench, which puts water into the aquifer for storage, ensures that the mitigation water is released through time instead of just during the irrigation season.

The Colony asked the DNRC to allow them to simply leave the water instream to mitigate their appropriation, which would save the Colony the maintenance of an infiltration gallery into perpetuity.

The Colony mitigated their 49.8 AF appropriation by retiring 53.1 AF of irrigation, an increase of 3.3 AF. It was decided to retire slightly more acres than needed in case there were issues in the permitting process that required additional mitigation volume, in order to avoid a possible required full re-write of the application. The DNRC noted this discrepancy in their deficiency letter, and finally dropped the issue after WRSI responded that it was unaware of any Administrative Rule requiring mitigation with exactly the same volume being appropriated.

In-stream mitigation: WRSI pointed out that leaving the water instream would benefit the source due to heavy irrigation depletions during the irrigation season.

- Depletion modeling showed that after 100 years of appropriation, only 39% (19.4 AF) of the Colony's annual appropriation (49.8 AF) would be depleted from the Sun River. However, during this same 100 years, there would be a net gain of at least 33.7 AF per year because of the volume being mitigated (53.1 AF – 19.4 AF = 33.7 AF at year 100). Even at 300 years of appropriation, the modeling shows that depletion to the Sun River would be only 62.3% or 31.0 AF of the total appropriation. The net annual gain to the Sun River after 300 years is 22.1 AF (53.1 AF – 31.0 AF = 22.1 AF at year 300).

- Even with total depletion to the Sun River at 100% (the 49.8 AF being appropriated), there would still be a net gain of 3.3 AF per year to the river because of the extra mitigation the Colony chose to provide.

- DNRC, however, pointed out that the Colony's use would still eventually deplete the Sun River outside the historic period of use of the irrigation right, and denied the use of leaving the mitigation water instream. It is hard to believe that providing extra water to the Sun River, especially during the heavily-used irrigation season, is not more beneficial than requiring an infiltration trench that must be maintained forever.

Putting Together an Aquifer Recharge and Mitigation Plan

- The Applicant must describe how and where the water in the aquifer recharge plan will be put to beneficial use.

- The Applicant must design an infiltration trench that is capable of providing the infiltration capacity for the flow rate of water used for mitigation. This is similar to a perk test done for septic systems. The ground must be able to accept the water that is directed into the trench. Although nothing substitutes for a physical test, an Applicant doesn't want to go through that unless he is going to get the permit. As a result, a model is used to predict the needed dimensions of the proposed trench.

- The Applicant must then design a trench and provide the materials required to move the water from the point of diversion to the trench. Materials may include a headgate, flow meter, sediment collection pits, piping, valves, a trench cover, and one or more monitoring wells.

- Cost of the infiltration gallery cannot be determined as it has not yet been constructed.

**Total Cost of Permit and Change Applications: $69,640.52**

## PERMIT VS. EXEMPT WELL

- An Applicant would only choose a new permit over a series of exempt wells because of logistics:
  - Aquifer is too deep and therefore too costly for multiple individual wells;
  - Aquifer is too shallow and could encounter groundwater under the influence of surface water, which could require expensive water purification equipment to meet DEQ standards.

- Permits are very costly because they require extensive collection of data to assess aquifer characteristics:
  - Pumping tests
  - Water level monitoring
  - Hydrogeologic report

- Permits are very costly because of the time expenditure for modeling:
  - Groundwater modeling
  - Groundwater/surface water interaction modeling

- Permits are very costly because they require an associated change application in a closed basin:
  - Changes needlessly require a full adjudication of the underlying right, making an applicant subject to two full adjudications – one from the TPD process and a second from DNRC during the change process.

**WHY IS THE STATE SPENDING SO MUCH MONEY ON ADJUDICATION IF THE DNRC HAS THEIR OWN ADJUDICATION PROGRAM (CHANGE APPLICATIONS)?**

- The change process is fundamentally flawed.
- The current form is long and asks the same questions many times, which creates confusion for both the applicant and reviewer.
- Constant corrections between the legal staff and field office reviewers cause delays -- regional staff have reported sending applications back and forth up to ten times.
- Timeframes are out of sync with other permitting processes by state and county offices.
- Having only a half-time attorney reviewer creates a bottleneck in the system.
- Applicants don't know what to expect from different regional offices.
- DNRC does not want input on the process from stakeholders.

One example of the dysfunction of the change process is the question of whether multiple water rights can be included in the same change. WRSI recently submitted a change application to DNRC for the Broken O Ranch between Augusta and Simms.

- DNRC rejected the application on the basis that the application did not meet the definition of a single "project" as defined by ARM 36.12.101 (53). However, the specific language of ARM 36.12.1901 (8) states: "Multiple water rights may be changed on one application if upon completion of a project, all of the water rights being changed accomplish a single proposed project; if not, separate applications must be filed."

  ARM 36.12.101 (53) also specifically states: "'Project' means a place of use that has its own identifiable flow rate, volume, and means of diversion."

- The application included six water rights that are supplemental to each other, meaning they have overlapping places of use. The place of use for each water right has an identifiable flow rate, volume, and means of diversion.
  - Section C of the DNRC's newest rules states: "When two or more water rights have overlapping places of use, the water rights are considered supplemental. If a water right to be changed has supplemental water rights, an applicant must include those water rights in the change application or must explain how each of the supplemental water rights has been used historically and how each one of the supplemental water rights will be used if the proposed change application is granted." (emphasis added)
  - DNRC's rejection letter stated: "The multiple water rights of record that are included in your application will be physically irrigating different places of use." This, however, is incorrect. While it is true that the places of use are not exactly the same, there are large portions of overlapping places of use, which makes them SUPPLEMENTAL. By DNRC's own rules, they should be included in the same application.
  - Prior to starting the application, WRSI personnel met with Kim Overcast, the then New Appropriations Program Manager, to discuss this very issue. After reviewing the map showing the places of use, the diversions, and conveyance facilities, Ms. Overcast advised that the changes could be made on a single application.

- WRSI believes DNRC is simply trying to buy time by rejecting this application because they don't feel they can process it in the statutory timeframe allowed. WRSI does not feel it is right that Broken O Ranch should have to incur the cost involved in dismantling the single application into four separate applications -- the supplemental water rights are obviously a single project, and a single application was prepared based on DNRC's advisement to do so.

## SUGGESTED REVISIONS TO CHANGE/PERMIT PROCESS

1. Define a time period for adverse effects. It shouldn't be infinite. Colorado has typically used a 100-year model.

2. Define a volume of adverse effect. It shouldn't be one molecule. If you can't measure an adverse effect, it shouldn't exist in the minds of the DNRC.

3. Applicant should be allowed to retire more volume than appropriated for mitigation without having to explain it several times to DNRC.

4. Applicants should be allowed to mitigate with instream flow if they can show no other adverse impact. There is no doubt that leaving water instream during the summer is more beneficial than minor depletions in the winter. If there is a doubt, then the legislature should commission a study or empanel a group of experts to decide the issue.